CIA/OBGI/RP 74-1

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Probable Chinese Collection of U.S. Satellite Imagery

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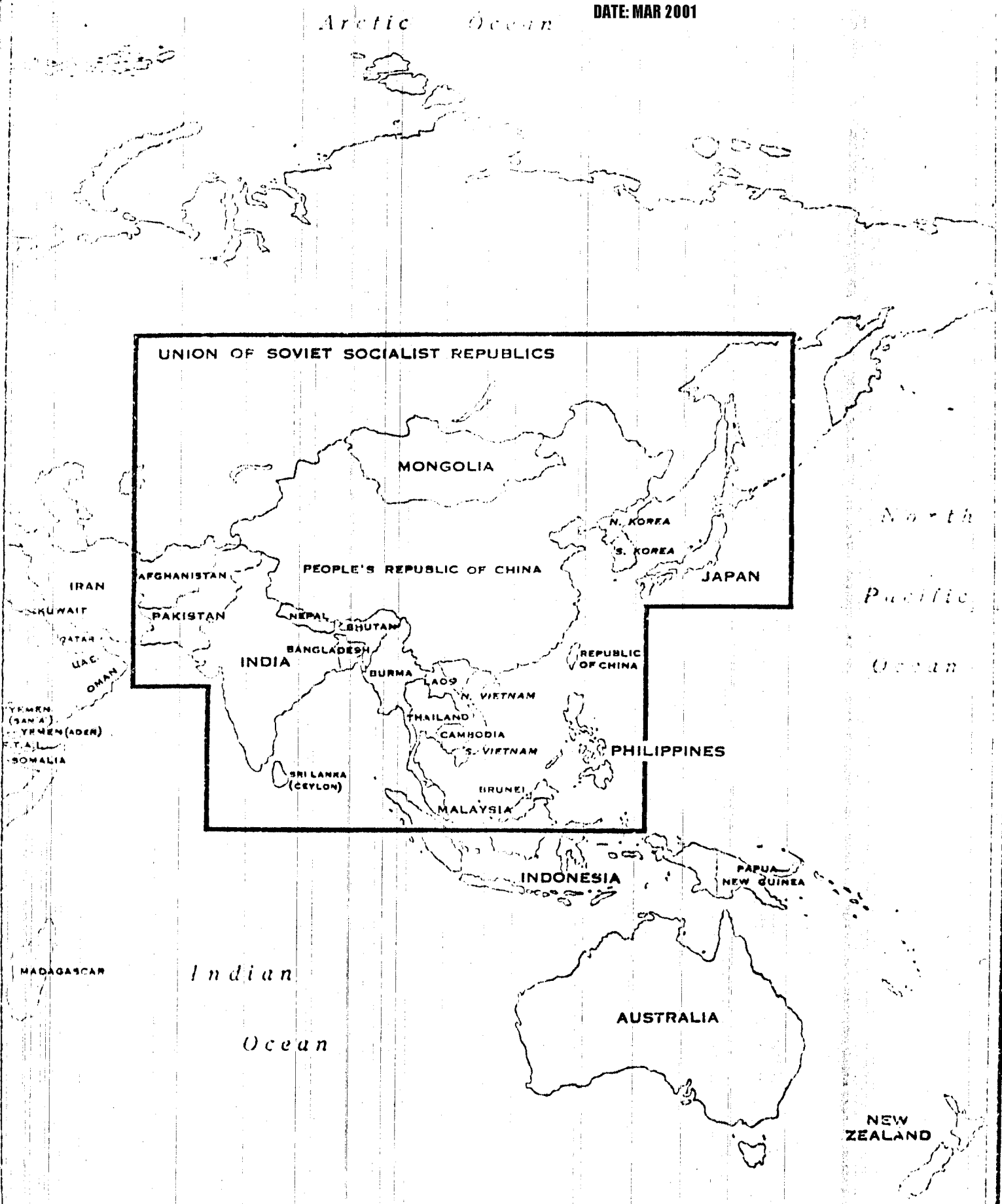
CIA/ BGI RP 74-1
August 1973



EXTENT OF ERTS COVERAGE REQUESTED

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Central Intelligence Agency
Directorate of Intelligence
August 1973

PROBABLE CHINESE COLLECTION OF US SATELLITE IMAGERY

1. A recent order for US Earth Resources Technology Satellite (ERTS) imagery indicates a strong likelihood that the PRC is attempting to exploit the satellite's reconnaissance potential. In a series of letters to the Sioux Falls ERTS Data Center, a [redacted] on behalf of an unidentified client, has ordered broad coverage that includes China and neighboring countries to a distance of about 1,000 miles from the Chinese border (see map). The hypothesis of a Chinese client is supported by review of previous activities of the [redacted] who originated the ERTS order. Earlier security investigations, going back to the late 1950's, revealed that [redacted] acquired information on the US on behalf of several Communist countries. These included US civil defense plans for an East European agent and a series of US patents for the PRC.

2. This collection activity fits a pattern the PRC has followed over the past several years. During this period they have used numerous international [redacted] to collect a considerable variety of [redacted] products that would be useful to missile targeting programs. Order lists have included topographic, gravity, aeromagnetic, and hydrographic maps and charts. Large-scale topographic maps are requested most frequently, with

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* *Comments and questions may be directed to* [redacted] *the Office of Basic and Geographic Intelligence,* [redacted]

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up to $5,000 per sheet being offered for coverage of the USSR near the China border. Several PRC orders during 1971 and 1972 requested US publications on remote sensing of the environment.

3. The suspected PRC ERTS order is elaborated in a series of at least six letters to the Data Center between September 1972 and July 1973. The first inquiries requested general information on the types of ERTS products available and on ordering procedures. A follow-up letter in October 1972 stated that, as the quantity of data is very large, the client wished to obtain a sample of each available product before making a decision on quantity and type of data to be ordered. In reply the Data Center selected a representative ERTS scene and provided a sample of each of the 52 products available from a single image.

4. Following study of the sample products, the client submitted his full order in April 1973. [redacted] requested a complete set of all satellite coverage of the area outlined on the accompanying map. The order specifies four 9 x 9-inch transparencies of each scene, representing each of the four bands imaged by the satellite's Multispectral Scanner (MSS). Images with more than 10 percent cloud cover are not wanted, and the best quality image is to be provided where there is repetitive coverage.

5. The US reply listed available satellite coverage of the specified area at that time. It consists of approximately 3,000 images, each covering an area of about 100 x 100 miles. Much of the western and southern portions of the area has repetitive and cloud-free coverage. In some of the eastern and northern portions coverage is lacking or is too heavily clouded.

6. Subsequent correspondence shows some confusion over selection of the images to be processed and a tone of urgency on the part of the [redacted] A letter in July 1973 contained payment of $9,463, indicating that the client believes nearly 800 of the listed images meet his selection criteria. This number of scenes, ignoring overlap, would cover approximately one half of the area

shown on the map. On 20 July the Data Center acknowledged receipt of the check and again asked for clarification of the exact procedure for selection of images from the list.

7. Although the primary application of ERTS data is for earth resource surveys, the ordered images could be used by the PRC in its missile targeting programs. They would be particularly valuable for identification and positioning of specific targets in the USSR, where the PRC has probably had limited success in acquiring adequate maps. Even where maps have been acquired, ERTS products would add to their information content and would provide a check on positional accuracies.

8. The capability for geodetically positioning photo-identifiable targets from ERTS MSS images varies in relation to the availability of supplementary data. Availability of photo-identifiable ground control and/or large scale maps allows positioning of targets to an accuracy of about 50 meters on the local coordinate system. At the opposite extreme, where positioning is based solely on an ERTS image without ground control or orbital information from satellite tapes, errors may be as large as 2,000 meters. A third, intermediate, situation would probably apply to a PRC attempt to geodetically position targets such as those located to the north of China up to a distance of at least 1,000 kilometers from the border. This would involve using photogrammetric bridging techniques to extend control from China into the USSR and Mongolia along a series of photographs from the same orbit.

9. Target identification using bulk-processed MSS images is limited by its ground resolution of 100 meters or more. Urban areas, ports, airfields, and similar large targets can generally be identified. Collateral would assist in identification of smaller facilities. At least a 100 percent improvement in image resolution could be effected by obtaining the data on magnetic tapes and digitally enhancing selected priority images. Although the Chinese have recently displayed a considerable amount of interest in image-enhancement techniques, the tape data are not routinely available and were not included in the [redacted] order.